

Climate change and adaptive land management in southern Africa

Biodiversity & Ecology 6

Assessments
Changes
Challenges
and Solutions

Product of the first research portfolio of

SASSCAL 2012–2018

Southern African
Science Service Centre for
Climate Change and
Adaptive Land Management

SPONSORED BY THE



Federal Ministry
of Education
and Research

© University of Hamburg 2018
All rights reserved

Klaus Hess Publishers
Göttingen & Windhoek
www.k-hess-verlag.de

ISBN: 978-3-933117-95-3 (Germany), 978-99916-57-43-1 (Namibia)

Language editing: Will Simonson (Cambridge), and Proofreading Pal
Translation of abstracts to Portuguese: Ana Filipa Guerra Silva Gomes da Piedade
Page desing & layout: Marit Arnold, Klaus A. Hess, Ria Henning-Lohmann
Cover photographs:

front: Thunderstorm approaching a village on the Angolan Central Plateau (Rasmus Revermann)

back: Fire in the miombo woodlands, Zambia (David Parduhn)

Cover Design: Ria Henning-Lohmann

ISSN 1613-9801

Printed in Germany

Suggestion for citations:

Volume:

Revermann, R., Krewenka, K.M., Schmiedel, U., Olwoch, J.M., Helmschrot, J. & Jürgens, N. (eds.) (2018) Climate change and adaptive land management in southern Africa – assessments, changes, challenges, and solutions. *Biodiversity & Ecology*, **6**, Klaus Hess Publishers, Göttingen & Windhoek.

Articles (example):

Archer, E., Engelbrecht, F., Hänsler, A., Landman, W., Tadross, M. & Helmschrot, J. (2018) Seasonal prediction and regional climate projections for southern Africa. In: *Climate change and adaptive land management in southern Africa – assessments, changes, challenges, and solutions* (ed. by Revermann, R., Krewenka, K.M., Schmiedel, U., Olwoch, J.M., Helmschrot, J. & Jürgens, N.), pp. 14–21, *Biodiversity & Ecology*, **6**, Klaus Hess Publishers, Göttingen & Windhoek.

Corrections brought to our attention will be published at the following location:

http://www.biodiversity-plants.de/biodivers_ecol/biodivers_ecol.php

Biodiversity & Ecology

Journal of the Division Biodiversity, Evolution and Ecology of Plants,
Institute for Plant Science and Microbiology, University of Hamburg

Volume 6:

Climate change and adaptive land management in southern Africa

Assessments, changes, challenges, and solutions

Edited by

Rasmus Revermann¹, Kristin M. Krewenka¹, Ute Schmiedel¹,
Jane M. Olwoch², Jörg Helmschrot^{2,3}, Norbert Jürgens¹

¹ Institute for Plant Science and Microbiology, University of Hamburg

² Southern African Science Service Centre for Climate Change and Adaptive Land Management

³ Department of Soil Science, Faculty of AgriSciences, Stellenbosch University

Hamburg 2018

Please cite the article as follows:

Hillmann, T., Muche, G., Josenhans, K. & Jürgens, N. (2018) SASSCAL Photo Guide to Plants of Southern Africa. In: *Climate change and adaptive land management in southern Africa – assessments, changes, challenges, and solutions* (ed. by Revermann, R., Krewenka, K.M., Schmiedel, U., Olwoch, J.M., Helmschrot, J. & Jürgens, N.), pp. 424-425, *Biodiversity & Ecology*, **6**, Klaus Hess Publishers, Göttingen & Windhoek. doi:10.7809/b-e.00354

SASSCAL Photo Guide to Plants of Southern Africa

Thomas Hillmann^{1*}, Gerhard Mucbe¹, Katrin Josenhans¹, Norbert Jürgens¹

1 Institute for Plant Science and Microbiology, University of Hamburg, Ohnhorststr. 18, 22609 Hamburg

* Corresponding author: thomas.hillmann@uni-hamburg.de

Numerous plant species — but limited tools for identification

Southern Africa is home to a rich flora, with Germishuizen & Meyer (2003) listing 24,035 taxa. To date, the number of printed publications that can be used to identify species is still limited, and there is a need to develop new tools for identification.

This was the starting point for developing the *Photo Guide to Plants of Southern Africa*. The photo guide serves as a tool that enables experts and non-scientists to make photos of identified plants available and, in return, access the identified photographs of plants that have been submitted by other experts. Thus, the photo guide has become a well-structured online database facilitating the identification of plant species, saving manpower and time.

The photo guide enables the viewing of taxonomic groups such as genera or families. Series of photos display different aspects of plants, ranging from the entire plant to details of leaves or flowers as well as information about habitat.

At the moment, 18,439 photographs of 2,589 species are represented in the photo guide.

Currently, Namibia and the western parts of South Africa are best covered, and a growing number of photographs of the other SASSCAL countries Angola, Botswana, and Zambia are being added gradually.

Free online access

The website <http://www.southernafricanplants.net> offers basic information regarding the current content (how many photographs, how many species) and a dialog box that allows researchers to find species by inserting only a few characters of a plant's name. For example, if pictures of *Gorteria diffusa* are wanted, it is sufficient to type 'gor dif'. The search displays first three overview images of this species and presents additional taxonomic information (family, full species name with author), along with an indication of whether more photographs are available in the database. With only one click, a species-specific overview provides further information. All photographs in the photo guide's overviews are of low resolution and show only thumbnails, but another click on a thumbnail leads to a higher-resolution version of the selected photo so that the user can see each detail of the plant in question.

Access via external applications and offline version PhotoGuide ToGo

It is possible to access species in the photo guide directly by extending the URL by genus and epithet of the species in question:

http://www.southernafricanplants.net/plantdata_main.php?extern_crit=Genus.Epithet

For example, if you are interested in *Gorteria diffusa*, the following URL is used:

http://www.southernafricanplants.net/plantdata_main.php?extern_crit=Gorteria.diffusa

The software for managing vegetation monitoring data, BIOTABase (Mucbe et al., 2018), uses this functionality to display photos of the species stored in its database. For field work or work in regions with bad Internet coverage, we developed the PhotoGuide ToGo. The PhotoGuide ToGo has the same functionality as the online version but must be updated manually if the online version changes.

Call for participation

Any botany expert can participate in completing the collection and filling in gaps. Photos, either individually or in a batch, can be sent to the webmaster. The photos should be accompanied by information on taxonomy, the place of observation, and the recording time as well as the name of the photographer. When the photos are inserted into the online database, the photographer can edit his or her records in an internal area of the website. We cordially invite skilled photographers, scientists, and interested institutions to contribute to the photo guide in order to make species information available to African students, scientists, and the wider public for education, planning, and conservation purposes. The photo guide is also to serve as an online discussion platform for identifying errors in plant species identifications.

References

Germishuizen, G. & Meyer, N.L. (eds.) (2003) Plants of southern Africa: an annotated checklist. *Strelitzia*, **14**, National Botanical Institute, Pretoria.
Mucbe, G., Schmiedel, U., Finckh, M. & Jürgens, N. (2018) BIOTABase – a unique software to handle complex biodiversity observation data and environmental data. This volume.

Home Search by Family Search by Genus Login

You are here: [Home](#) Search by family

What are you looking for?
(fill in genus and/or epithet)

Only species with photos

Search by family

Step 1: Please select at least one family

<input type="checkbox"/> Ebenaceae (66)	<input type="checkbox"/> Ophioglossaceae (6)	<input type="checkbox"/> Violaceae (0)
<input type="checkbox"/> Elatiaceae (3)	<input type="checkbox"/> Opiliaceae (0)	<input type="checkbox"/> Viscaeeae (22)
<input type="checkbox"/> Equisetaceae (0)	<input type="checkbox"/> Orchidaceae (24)	<input type="checkbox"/> Vitaceae (83)
<input type="checkbox"/> Ericaceae (11)	<input type="checkbox"/> Orobanchaceae (11)	<input checked="" type="checkbox"/> Welwitschiaceae (26)
<input type="checkbox"/> Eriocaulaceae (0)	<input type="checkbox"/> Orthotrichaceae (0)	<input type="checkbox"/> Xynidiaceae (0)
<input type="checkbox"/> Erpodiaceae (0)	<input type="checkbox"/> Oxalidaceae (26)	<input type="checkbox"/> Zannichelliaceae (0)
<input type="checkbox"/> Erythroxylaceae (0)	<input type="checkbox"/> Oxymitraceae (0)	<input type="checkbox"/> Zingiberaceae (3)
<input type="checkbox"/> Euphorbiaceae (559)	<input type="checkbox"/> Papaveraceae (1)	<input checked="" type="checkbox"/> Zygophyllaceae (484)
<input type="checkbox"/> Exornothaceae (0)	<input type="checkbox"/> Passifloraceae (35)	
<input type="checkbox"/> Fabaceae (1292)	<input type="checkbox"/> Pedaliaceae (170)	

(number of photos in brackets)

Only species with photos

Search parameters

Selected families: Welwitschiaceae, Zygophyllaceae,
Search results: 32 Entries
only species with photos

family: WELWITSCHIACEAE

Welwitschia mirabilis Hook.f.

Family: WELWITSCHIACEAE
Genus: Welwitschia
Species: Welwitschia mirabilis
Scientific name: Welwitschia mirabilis Hook.f.
Life form: Nano-phanerophyte: very small 0.5-2 m high with vertically compressed stems (internodes not visible)
Life cycle duration: perennial
Mean plant height: 1300 mm

[West African Plants](#)
[African Plants Initiative](#)
[IPNI](#)

PhotoID: 8782
Species: Welwitschia mirabilis Hook.f.
Photographer: N. Juergens
Date: 2007-07-30
Country: Angola
Location: Iona-Between Lake Orca and Tamboa
Photo 1 of 26

Figure 1: Search feature of the photo guide.



Figure 2: *Gorteria diffusa* Thunb. South Africa/Namaqualand/ Soebatsfontein. Photo: U. Schmiedel.



Figure 3: *Juttadinteria alba* (L. Bolus) L. Bolus. Photo: S. Rügheimer et al.